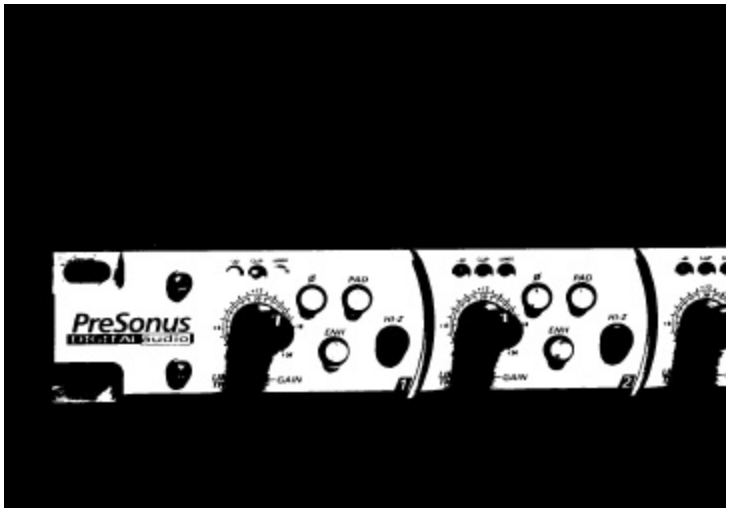
DIGIMAX

Eight Channel Microphone Preamplifier *with* Dual Domain Limiters and Digital Outputs



User s Manual

PreSonus Corporation

DigiMax

EIGHT CHANNEL MICROPHONE

PREAMPLIFIER

With
Dual Domain Limiters and Digital Outputs

USERS MANUAL

Version 1.0

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1 OVERVIEW

1.1 INTRODUCTION

Thank you for purchasing the PreSonus DigiMax™ Eight Channel Microphone / Instrument Preamplifier with Dual Domain Limiters and Digital Outputs. This digital pre-amp has been designed and constructed using the very latest in components and technology to provide its user crystalline audio reproduction for an infinite period of time. We at PreSonus believe the DigiMax to be an exceptional sounding unit and an exceptional value. Contact us at 1-800-750-0323 with your questions or comments you may have concerning this unit or its operation. PreSonus Audio Electronics is committed to the philosophy of constant product improvement. Our experience has taught us the best way to convert this philosophy into action is by listening to the *experts* on our gear, our valued customers. We appreciate the support you have shown us through the purchase of this product.

Please pay close attention when connecting your DigiMax to your system. Improper grounding is one of the most common causes of noise problems encountered in the recording or sound reinforcement environments. We recommend scanning this manual before hooking up your DigiMax to your system so you may familiarize yourself with its functions and features.

Good luck and enjoy your DigiMax!

1.2 FEATURES

The following is a summary of the features of the PreSonus DigiMax

Dual Servo Mic Pre. Each channel of your DigiMax contains a Class A discrete input buffer followed by a dual servo gain stage. This provides ultra low noise and wide gain control allowing the DigiMax user to boost desirable signal without increasing unwanted background noise (NO capacitors!)

48V Phantom Power. Each channel of the DigiMax has 48V Phantom power available. When the Phantom power switch is engaged, power is supplied at a constant rate. This assures optimum performance of your condenser microphone(s) and that it will be free of distortion associated with insufficient power. This switch is located on the back panel adjacent to the XLR input.

Phase Reverse Switch. A phase reverse switch is provided on channels One and Two. This switch enables the user to invert the phase of a microphone when phase cancellation is noted. The phase reverse switch allows the operator to avoid phase cancellation when identical microphones are used in close proximity to one another. The phase reverse switch also can compensate for different XLR connector hook-ups where pin connections have been inverted.

-20 dB Pad. A -20 dB pad is available on each channel of the DigiMax for reducing in-coming signal levels to the unit. Using this pad can provide a more manageable signal from high output devices giving the operator greater control over the in-coming signal and a much reduced chance of over-driving the input and thereby avoiding distortion.

Enhance. The Digimax provides an EQ Enhancement feature on each channel. Engaging this switch gives the processed signal a cut of 3 dB between 250 Hz and 5kHz. This has a smoothing effect on mid-range heavy signals and gives a flatter response characteristic.

Sample Rate Selector. The Digimax has a switch on the front panel that lets the operator choose the sample rate. It provides selectable rates of 32k, 44.1k and 48k.

EXT CLOCK. When the External clock switch is engaged the Digimax goes into "chase" mode and automatically recognizes

which of the three sampling rates is required for optimum synchronization.

Dual Concentric Control. Each channel of the DigiMax has a dual concentric rotary control for adjusting the channel's gain (inner) and for selecting the dual domain limiter's threshold (outer).

Analog Output. The rear panel of the DigiMax contains analog impedance balanced outputs for each channel. These outputs provide an analog duplicate of the digital output of the unit. This duplication of the digital output allows the user to monitor the analog output with a mixing console and overcoming the "latency" problem (time delay) that may be encountered when trying to record in "digital".

Digital Optical Output. The DigiMax has a adat™ lightpipe output that can be used with any commercially available digital optical cable. This cable can supply eight simultaneous outputs.

Digital Output. The DigiMax has a chassis mounted 9 pin connector which can provide either AES/EBU or SP/DIF outputs depending on which model of cable is used as well as the internal configuration of the jumpers on the output card of the unit.

2 CONTROLS & CONNECTIONS

2.1 FRONT PANEL BASIC LAYOUT

Notice that the front panel is divided into **Eight Preamplifier** sections, **Sample Rate Selector** with **Indicators** and **External Clock Switch**. Channel One and Channel Two each have a Hi-Z input (Channel Three through Channel Eight do not have a Hi-Z input).

Both **Channels One** and **Two** contain:

- Phase Reverse Switch
- -20dB Pad
- Enhancement Switch
- Hi-Z Input
- Dual Concentric Control

  (Inner-Gain / Outer-Limiter Threshold)
- -20/Clip/Limit LED s

Channels Three through **Eight** contain:

- PAD

- ENH
- Dual Concentric Control

  (Inner-Gain/Outer-Limiter Threshold)
- -20/Clip/Limit LED s

Dual Concentric Control:

Gain. The inner concentric control provides 60dB of gain to the processed signal. The amplifier has inherent gain of 12dB thus delivering a total gain possibility of 72dB.

LIMITER THRESH. The outer concentric control sets the Threshold of the dual domain limiter. The threshold ranges from 0 to +24dB.

-20 / Clip / Limit LED's

The three LED's found on each channel are provided to serve different functions:

-20. The LED farthest to the left is labeled –20 and serves to monitor whether or not signal is present at the channel output.

Clip. The LED labeled Clip activates at a pre limiter signal level of +24 dB. Care should be taken to avoid using signal levels that cause this LED to become active. Signal levels that reach or exceed this amount of output will cause undesirable artifacts (distortion) in the channel output signal that is being indicated by this LED. The signal level is reduced by rotating the channel's inner concentric control, counter-clockwise.

LIMIT. The LED farthest to the right is labeled LIMIT. This LED is activated by signal levels that reach or exceed the level that is pre-determined by the Threshold setting selected (outer concentric control). The setting of this control selects the point at which the

limiter acts upon the signal coming through the channel. Proprietary technology of the dual domain limiter allows it to act instantaneously upon the signal at Threshold. The unique benefits of peak limit control have been combined with the desirable audible results of RMS limiting to provide DigiMax users with completely transparent overload protection for digital recording. (*NOTE: It is possible to get some very cool effects by driving the limiter with transients. These effects may be achieved by using low threshold settings and high gain. Care must be taken to avoid distortion.)*

- Sample Rate Selector
- LED Indicators -(32k 44.1k-48k)
- EXT Clock

The section at the extreme right of the front panel contains the **Sample Rate Selector Switch** with **LED indicators** provided for **32k**, **44.1k** and **48k**. This section also contains a switch labeled **EXT. CLOCK**. When this switch is engaged the operating clock rate of 32k, 44.1, or 48k will be determined by the incoming signal from an external device through the Word Clock In input on the back panel of the DigiMax.

2.2 BACK PANEL BASIC LAYOUT

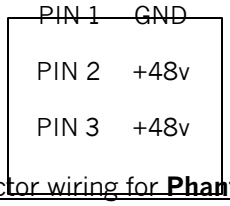
Digital Optical Output. An adat™ optical output (lightpipe) is provided on the rear panel of the DigiMax. Eight simultaneous 24bit outputs are possible when using the optical out.

Digital Output Connector. A female nine pin (DB9) connector on the rear panel of the DigiMax provides 24bit digital output. This connector comes configured from PreSonus for AES/EBU output (4 pair stereo) when used with the (***optional***) Model No. 510- DMAX 007 cable available at an

authorized PreSonus dealer or which can be ordered directly from PreSonus. S/PDIF outputs can also be obtained from an Authorized PreSonus dealer by purchasing a Model No.510-DMAX008 cable or by ordering the cable from PreSonus. The use of the S/PDIF output requires re-configuring the jumpers on the output card of the DigiMax. While this is a simple operation, care must be taken when moving the jumpers. A diagram and complete instructions regarding this procedure are included with the 510-DMAX008 cable. Should you need further assistance, contact Customer Support at PreSonus by calling 800-750-0323 between the hours of 10:00 AM and 5:00 PM CST

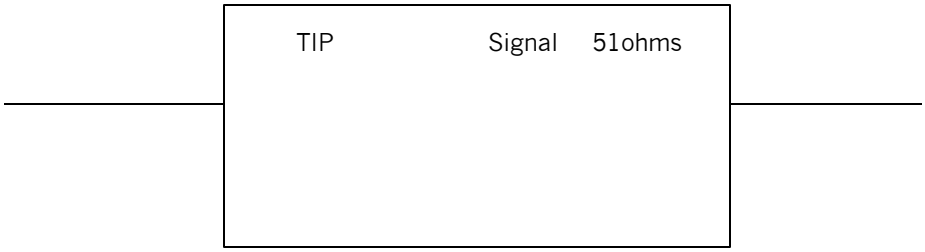
Word Clock Out/In. The Word clock output and input are accessed through separate BNC connectors. The internal sample rate can be set to send 32k, 44.1k, or48k. The Word Clock In scans the incoming information and automatically synchs to the necessary sample rate.

+48V. A switch labeled +48V is located next to each microphone input. This switch may be engaged to provide phantom power for condensor mics and any other device, which may require phantom power by way of the XLR input. This power is supplied at a constant rate to allow use of all eight inputs, simultaneously, without any degradation of audio quality.



XLR connector wiring for **Phantom Power**

ANALOG OUTPUT. Each channel of the DigiMax has an analog output that parallels the digital signal being sent from the associated channel. This output can be very useful for monitoring purposes by helping in overcoming the time discrepancy that may be encountered in some digital recording situations. This output is impedance balanced and the connection is wired as follows:



RING 51ohms

SLEEVE GND

Analog Impedance Balanced wiring diagram

2.3 EXTERNAL POWER SUPPLY

The External **Power Supply** supplied with the DigiMax has two cords attached to the unit. The cable labeled DC/OUT goes to the DC input on the DigiMax pre-amp. The cord labeled AC goes to the electrical power source . The DigiMax is configured at the factory to operate on specific voltages. Make sure the unit is set-up for the correct voltage available in the locale where the unit is to be operated. If you are unsure whether or not the unit you have is configured for the available voltage in you area, contact an Authorized PreSonus dealer in your area before use to avoid physical injury to the user or severe damage to the unit could result. The four green LED s on the face indicate the presence of current on the power rails. V1=+5 volts, V2=16.5 volts, V3=-16.5 volts, and V4=+48 volts respectively.

WARNING! Before powering up your DigiMax for the first time make certain that the stated power requirement of the unit (as stated on top of the external power supply) matches the voltage supplied in the country where the unit will be operated (USA = 115V). Failure to do so could result in injury or even death to the user and the probability of irreparable damage to the unit is highly likely.

3 OPERATION

3.1 DYNAMIC MICROPHONES

Dynamic microphones are characterized by lower output levels. Hence, more gain is needed to amplify a dynamic microphone to operating level. Occasionally it is necessary to add the 20dB pad to the microphone to avoid distortion (e.g. when recording percussion). Do not use phantom power when using dynamic microphones.

3.2 PHANTOM POWERED MICROPHONES

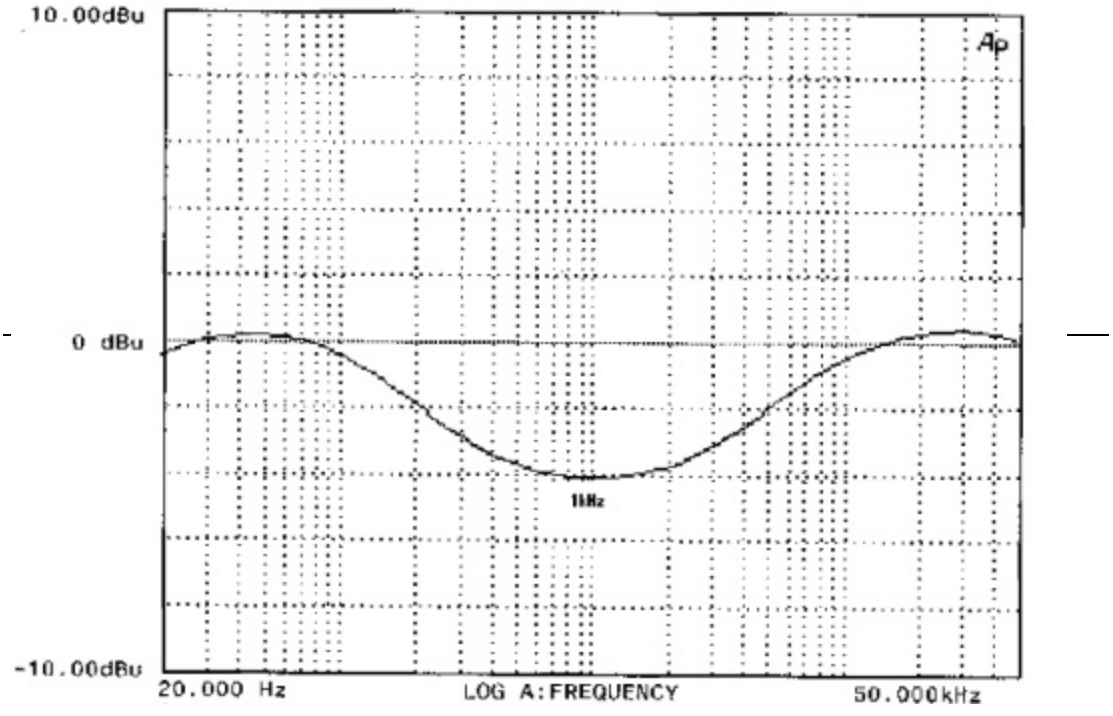
Phantom powered microphones such as condensors and some ribbon microphones require external power to pre-amplify the microphone acoustic pickup. These microphones typically have much higher output than dynamic microphones. Hence the 20dB pad is almost always necessary when close micing to avoid clipping the amplifier.

3.3 INSTRUMENT INPUT

The instrument inputs on channels one and two are designed to handle ¼ plugs from instruments such as electric guitars and basses. These instrument inputs are ultra high impedance amplifiers designed to allow the audio potential of an acoustic or electric instrument pickup to be fully realized. Care should be taken not to overdrive these inputs with the signals from instruments with on-board preamplifiers.

3.4 ENHANCEMENT

The Enhancement function of the DigiMax gives the processed signal a 3dB cut from 250 Hz to 5kHz. The slope of this frequency cut has a smoothing effect on the signal that is being processed. For certain voices and microphones, which may tend to possess a characteristic mid-range rise, this feature will have the effect of flattening the mids. This will result in a fuller frequency response and an apparently richer; fuller sound. Experimenting with the Enhancement feature will allow you to expand the sound potential of your available microphones and instruments. The following graph is a representation of the EQ curve derived with the ENH switch, engaged.



4.1 TECHNICAL SPECIFICATIONS

DigiMax Technical Specifications:

Number of Channels	Eight
Input	
Input Impedance, XLR Input	1.3kΩ
Input Impedance, Instrument Input	1MegΩ
Connectors	Neutrik™ XLR 1/4”TS Ch.1&2 only)

Panel Controls

Gain	0dB to +40dB
Limiter	0dB to Off
Phase Reverse (1 & 2 only)	
Pad	-20 dB
Phantom Power	+48 V (Back Panel)

Meters

Signal Present LED	-20dBu
Clip LED	+22dBu
Limit LED	Limiter Active

Output

¼ " TRS Impedance Balanced	51Ω
adat™ lightpipe digital optical	24bit
AES/EBU (4 pair stereo)	24bit
S/PDIF (4 pair stereo)	24bit

Digital

Sampling Rates	32kHz, 44.1kHz, 48kHz
Dither Type	Psycho-acoustic

Performance

THD + Noise (Un-weighted)	<0.009%
Noise Floor	-94dBu
Signal to Noise	>98dB
Analog Dynamic Range	>120dB
Power Supply Rejection	>98dB
Amplifier Type	Dual Servo

Power Supply

Type	Linear, External
Input	100/120/220/240VAC (Factory Configured)
Power	80 Watts

Physical

Size	1U Rack
Dimensions	19” X 1.75” X 7”
Weight	15 lbs.
Chassis	Steel
Panel	Aluminum

As a commitment to constant improvement, PreSonus, Inc. reserves the right to change any specification stated herein at any time in the future without notification.